

CLAIMS

What is claimed is:

1. An adapter for mounting an associated article to an associated anchor rail, the anchor rail being formed as a U-shaped channel having a pair of upstanding, opposing legs, each leg having an inwardly extending wall and terminating in a downwardly oriented lip, the adapter comprising:

a mounting surface;

flanges depending from the mounting surface; and

mounting legs extending from the flanges, the mounting legs each having a hook-like portion for engaging a respective rail lip;

the adapter being flexible to permit urging the flanges inwardly toward one another for inserting a portion of the mounting legs into the U-shaped channel, and further being resilient such that the hook like portions biasedly engage the rail lips.

2. The adapter in accordance with claim 1 wherein the mounting legs include an inwardly extending portion contiguous with a downwardly extending portion, and wherein the hook-like portion is formed at an end of the downwardly extending portion.

3. The adapter in accordance with claim 1 including at least one binding element formed on at least one of the mounting legs cooperating with each hook-like portion to clamp the respective rail lip between the hook-like portion and the at least one binding element.

4. The adapter in accordance with claim 3 wherein the binding element is disposed on the inwardly extending portion.

5. The adapter in accordance with claim 4 wherein the binding element is a tab formed in the inwardly extending portion, the tab being defined by a pair of notches in the inwardly extending portion.

6. The adapter in accordance with claim 5 wherein the tab includes a downwardly bent portion configured to bite into a respective rail inwardly oriented wall.

7. The adapter in accordance with claim 1 including an opening formed in the adapter mounting surface.

8. The adapter in accordance with claim 1 wherein the mounting surface is a top surface.

9. The adapter in accordance with claim 1 wherein the mounting surface is planar.

10. The adapter in accordance with claim 1 wherein the mounting surface is curved.

11. The adapter in accordance with claim 7 including a collar depending from a periphery of the opening.

12. The adapter in accordance with claim wherein the collar includes threads formed therein.

13. The adapter in accordance with claim 7 including a plurality of downwardly/inwardly oriented projections extending from a periphery of the opening.

14. An adapter for mounting an associated article to an associated anchor rail, the anchor rail being formed as a U-shaped channel having a pair of upstanding, opposing legs, each leg having an inwardly extending wall and terminating in a downwardly oriented lip, the adapter comprising:

a top surface;

flanges depending from the top surface;

means for biasedly engaging the respective rail lips; and

means for binding on the anchor rail,
the adapter being flexible to permit urging the flanges inwardly toward one another for inserting a portion thereof into the U-shaped channel, the means for biasedly engaging the respective rail lips urging the flanges outwardly to engage the U-shaped channel and the means for binding on the anchor rail engaging the anchor rail so as to inhibit movement of the adapter along the anchor rail.

15. The adapter in accordance with claim 14 wherein the top surface is a mounting surface.

16. The adapter in accordance with claim 14 including means for mounting an associated article to the adapter.

17. The adapter in accordance with claim 16 wherein the means for mounting includes an opening in the top surface.

18. The adapter in accordance with claim 17 wherein the opening defines a collar.

19. The adapter in accordance with claim 18 wherein the collar has threads formed therein.

20. The adapter in accordance with claim 16 wherein the means for mounting includes frictional means.

21. The adapter in accordance with claim 20 wherein the mounting means is a plurality of projections.

22. The adapter in accordance with claim 16 wherein the top surface is curved.

23. The adapter in accordance with claim 22 wherein the means for mounting includes slots formed in the flanges.

24. For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, a unitary resilient coupling having opposed legs with feet configured to securely lock into the channel when the legs are pinched and the coupling is inserted into the channel.

25. The coupling defined by claim 24 wherein said feet have hook-like portions for engaging a lip on the channel.

26. The coupling defined by claim 24 wherein said legs are configured to bite into the channel and prevent slippage of the coupling along the channel.

27. The coupling defined by claim 24 including a provision for retaining the article on the channel.

28. The coupling defined by claim 27 wherein said provision is configured to support an article.

29. The coupling defined by claim 27 wherein said provision comprises an opening adapted to be retentively engaged by an article support.

30. The coupling defined by claim 29 wherein said opening is threaded.

31. The coupling defined by claim 30 wherein said opening surrounded by a collar.

32. The coupling defined by claim 30 wherein said opening is surrounded by radial friction tabs.

33. The coupling defined by claim 34 wherein said coupling comprises an adapter for supporting an article support.

34. The coupling defined by claim 33 wherein said support is stackable to permit a number of articles to be daisy-chained on the channel.

35. The coupling defined by claim 24 wherein said coupling is configured to support an article between said legs.

36. The coupling defined by claim 35 wherein said coupling is adapted to support articles of different diameter.

37. The coupling defined by claim 27 wherein said coupling is adapted to support articles of different types.

38. The coupling defined by claim 35 wherein said coupling has spring fingers which support articles of different diameter.

39. The coupling defined by claim 24 configured to snap into the channel.

40. The coupling defined by claim 39 wherein said feet are configured such that the legs are automatically pinched when the coupling is pushed into the channel.

41. The coupling defined by claim 24 wherein said coupling is configured to support an article transverse to said legs.

42. The coupling defined by claim 41 having four legs, two legs engaging the channel on each side of the article.

43. The coupling defined by claim 41 wherein said coupling has spring fingers which support articles of different diameter.

44. The coupling defined by claim 41 wherein said provision comprises an opening adapted to be retentively engaged by an article support.

45. The coupling defined by claim 41 wherein said support is stackable.

46. The coupling defined by claim 44 wherein said provision comprises an opening adapted to be retentively engaged by an article support.

47. For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, a unitary resilient article support having opposed legs with feet configured to securely lock into the channel when the legs are pinched and the coupling is inserted into the channel, and further configured to retain an article between said legs.

48. The article support defined by claim 47 wherein said feet have hook-like portions for engaging a lip on the channel.

49. The article support defined by claim 47 wherein said legs each have one or more integral outstruck tabs which act when the article support is engaged to bite into the channel and prevent slippage of the article support along the channel.

50. The article support defined by claim 47 including a provision for supporting an a second article support on the article support .

51. The article support defined by claim 50 wherein said provision comprises an opening.

52. The article support defined by claim 50 wherein said opening is threaded.

53. The article support defined by claim 50 wherein said opening is surrounded by a collar.

54. The article support defined by claim 50 wherein said opening is surrounded by radial friction tabs.

55. The article support defined by claim 50 wherein said second support is stackable to permit a number of articles to be daisy-chained on the channel.

56. The article support defined by claim 47 wherein said coupling is adapted to support articles of different diameter.

57. The article support defined by claim 56 wherein said article support has spring fingers which support articles of different diameter.

58. The article support defined by claim 47 configured to snap into the channel.

59. The article support defined by claim 47 wherein said feet are configured such that the legs are automatically pinched when the coupling is pushed into the channel.

60. For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, a unitary resilient article support having opposed legs with feet configured to securely lock into the channel when the legs are pinched and the coupling is inserted into the channel, and further configured to retain an article transverse to said legs.

61. The article support defined by claim 60 wherein said feet have hook-like portions for engaging a lip on the channel.

62. The article support defined by claim 60 wherein said legs each have one or more integral outstruck tabs which act when the article support is engaged to bite into the channel and prevent slippage of the article support along the channel.

63. The article support defined by claim 60 including a provision for supporting an a second article support on the article support.

64. The article support defined by claim 63 wherein said provision comprises an opening.

65. The article support defined by claim 63 wherein said opening is threaded.

66. The article support defined by claim 63 wherein said opening is surrounded by a collar.

67. The article support defined by claim 63 wherein said opening is surrounded by radial friction tabs.

68. The article support defined by claim 63 wherein said second support is stackable to permit a number of articles to be daisy-chained on the channel.

69. The article support defined by claim 60 wherein said coupling is adapted to support articles of different diameter.

70. The article support defined by claim 69 wherein said article support has spring fingers which support articles of different diameter.

71. The article support defined by claim 60 configured to snap into the channel.

72. The article support defined by claim 71 wherein said feet are configured such that the legs are automatically pinched when the coupling is pushed into the channel.

73. For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, an assembly comprising:

a unitary resilient adapter having opposed legs with feet configured to securely lock into the channel when the legs are pinched and the adapter is inserted into the channel; and

an article support configured to connect to said adapter.

74. The assembly defined by claim 73 wherein said support is configured to releasably engage said adapter with a snap action.

75. The assembly defined by claim 73 wherein adapter has an opening, and wherein said support is adapted to lock into said opening.

76. The assembly defined by claim 73 wherein said support has a generally U-shaped resilient configuration with opposing legs structured to securely but releasably engage said adapter.

77. The assembly defined by claim 76 wherein said adapter has an opening which is engaged by barbed feet on said support legs.

78. The assembly defined by claim 73 wherein said support is stackable, having a provision for connecting a second support to itself to enable daisy chaining of said supports.

79. The assembly defined by claim 76 wherein said support is configured to retain an article between its legs.

80. The assembly defined by claim 73 wherein said adapter is configured to retain an article between its legs.

81. The assembly defined by claim 73 wherein said adapter is configured to retain an article transverse to its legs.

82. The assembly defined by claim 73 wherein said adapter and support are interconnected with a swivel joint, permitting articles to supported at any angle with respect to the channel.

83. The assembly defined by claim 75 wherein said adapter and support are interconnected with a swivel joint, permitting articles to supported at any angle with respect to the channel.

84. For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, an assembly comprising:

an adapter configured to securely lock into the channel; and

a resilient unitary article support having opposed legs structured when pinched to releasably connect to said adaptor.

85. The assembly defined by claim 84 wherein said support is configured to releasably engage said adapter with a snap action.

86. The assembly defined by claim 84 wherein adapter has an opening, and wherein said support is adapted to lock into said opening.

87. The assembly defined by claim 86 wherein said adapter opening is engaged by barbed feet on said support legs.

88. The assembly defined by claim 84 wherein said support is stackable, having a provision for connecting a second support to itself to enable daisy chaining of said supports.

89. The assembly defined by claim 84 wherein said support is configured to retain an article between its legs.

90. The assembly defined by claim 84 wherein said adapter and support are interconnected with a swivel joint, permitting articles to be supported at any angle with respect to the channel.

91. The assembly defined by claim 86 wherein said adapter and support are interconnected with a swivel joint, permitting articles to be supported at any angle with respect to the channel.

92. The assembly defined by claim 84 wherein said adapter is configured to retain an article between its legs.

93. The assembly defined by claim 84 wherein said adapter is configured to retain an article transverse to its legs.

94. For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, a unitary resilient coupling having opposed legs with feet configured to securely lock into the channel when the legs are pinched and the coupling is inserted into the channel, said support being configured to snap into the channel.

95. The support defined by claim 94 wherein said feet are configured such that the legs are automatically pinched when the coupling is pushed into the channel.

96. For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, a stackable first

article support of having a resilient, generally U-shaped body with legs which grip an article, the distal ends of the legs being structured to snap-lock onto a second article support, the first article support having a snap-in stacking provision.

97. The apparatus defined by claim 96, wherein the distal ends of the legs are adapted to snap lock into an opening, and wherein the provision comprises an opening.

98. The apparatus defined by claim 97, wherein the opening is an aperture with a circular or other curved boundary.

99. The apparatus defined by claim 98, wherein the aperture has a stiffening flange.

100. The apparatus defined by claim 98, wherein the distal ends of the legs have barbs with a cross-sectional curvature substantially matching the curvature of the boundary along the area of engagement with the aperture.

101. A stack of supports for retaining waveguide transmission lines, or electrical, pneumatic, hydraulic or other utility lines, or other articles on a strut-type channel, said supports comprising:

a first stackable snap-in article support having a generally U-shaped body with legs which grip an article, the distal ends of which legs being structured to snap-lock onto a second article support, the first support having a stacking provision; and

a second stackable snap-in article support snap-locked onto the stacking provision of the first article support.

102. The apparatus defined by claim 101, wherein the distal ends of the legs are adapted to snap lock into an opening and wherein the provision comprises an opening.

103. The apparatus defined by claim 101, wherein the distal ends of the legs and the stacking provisions are structured such that vibrations of the held articles are damped.

104. The apparatus defined by claim 103, wherein the opening is an aperture with a circular or other curved boundary.

105. The apparatus defined by claim 104, wherein the aperture has a stiffening flange.

106. The apparatus defined by claim 104, wherein the distal ends of the legs have barbs with a cross-sectional curvature substantially matching the curvature of the boundary along the area of engagement with the aperture.

107. For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, a support having a generally U-shaped body with legs which grip a transmission line, the distal ends of which legs have barbs structured to snap-lock onto an edge of an opening in a second article support, each barb having an edge-engaging surface which is serrated or notched.

108. The apparatus defined by claim 107, wherein the support includes a snap-in stacking provision.

109. The apparatus defined by claim 108, wherein the snap-in stacking provision comprises an opening adapted to be engaged by another snap-in support.

110. The apparatus defined by claim 109, wherein the opening is an aperture with a circular or other curved boundary.

111. The apparatus defined by claim 110, wherein the aperture has a stiffening flange.

112. The apparatus defined by claim 110, wherein the barbs have a cross-sectional curvature substantially matching the curvature of the boundary along the area of engagement with the aperture.

113. For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, an article support having a generally U-shaped body with legs which grip an article, the distal ends of which legs have barbs structured to snap-lock onto an edge of an opening in an article support, the support legs each having an outwardly extending brace which abuts the opposite surface of the edge from that engaged by a barb, the brace being rigid and structured to dig into, rather than slide along, the opposite surface when the support is side loaded.

114. The apparatus defined by claim 113, wherein the brace has an out-turned side with a distal edge which makes point contact with the opposite surface when the support is side loaded.

115. The apparatus defined by claim 114, wherein the brace has an in-turned side with a distal edge which engages the opposite surface, the out-turned and in-turned sides of the brace stiffening the brace and widening its footprint on the opposite surface.

116. The apparatus defined by claim 113, wherein the support includes a snap-in stacking provision.

117. The apparatus defined by claim 116, wherein the snap-in stacking provision comprises an opening adapted to be engaged by another snap-in support.

118. For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, an article support having a generally U-shaped body with legs which grip an article, the distal

ends of which legs have barbs structured to snap-lock onto an edge of an opening in an article support, the support legs each having means structured to abut the opposite surface of the edge from that engaged by a barb and create a fixed pivot point or line for the support when side loaded.

119. The apparatus defined by claim 118, wherein the support includes a snap-in stacking provision.

120. The apparatus defined by claim 119, wherein the snap-in stacking provision comprises an opening adapted to be engaged by another snap-in support.

121. For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, a method comprising:

providing a unitary resilient coupling having opposed legs with feet configured to securely lock into the channel;

pinching the legs together;

inserting the coupling legs into the channel; and

releasing the legs to securely lock the coupling in the channel.

122. The method defined by claim 121 including a providing a provision on said coupling for retaining an article on the channel.

123. The method defined by claim 122 wherein said provision is configured to retain an article support.

124. The method defined by claim 123 wherein said provision comprises an opening adapted to be retentively engaged by an article support.

125. The method defined by claim 124 including inserting and retentively engaging an article support in said opening in said coupling.

126. The method defined by claim 125 including configuring said support to be stackable, and including daisy-chaining a plurality of supports to permit a number of articles to be stacked on the channel.

127. The method defined by claim 121 including configuring said coupling to support an article between said legs.

128. For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, a method comprising:

providing a unitary resilient adapter having opposed legs configured to securely lock into the channel;

pinching the legs;

inserting the adapter legs into the channel;

releasing the legs to securely lock the adapter in the channel;

providing an article support configured to connect to said adapter; and

attaching said article support to said adapter.

129. The method defined by claim 127 including configuring said support to releasably engage said adapter with a snap action.

130. The method defined by claim 127 including configuring said adapter to have an opening, configuring said support to have legs with feet which lock into said opening, and retentively engaging said feet in said opening to retain said support on said adapter.

131. The method defined by claim 127 including configuring said support to have a generally U-shaped resilient configuration with opposing legs structured to securely but releasably engage said adapter, and retentively connecting said legs to said adapter.

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~~131.~~ The method defined by claim 130 including configuring said adapter to have an opening which is engaged by barbed feet on said support legs.

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~~132.~~ The method defined by claim 127 including configuring said support to be stackable, and to have a provision for connecting a second support to itself, said method including daisy-chaining said supports on said adapter.

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~~133.~~ The method defined by claim 130 including configuring said support to retain an article.

135
~~134.~~ For retaining a waveguide transmission line, or electrical, pneumatic, hydraulic or other utility line, or other article on a strut-type channel, a method comprising:

configuring an adapter to securely lock into the channel;
providing a resilient unitary article support having opposed legs with feet structured to engage said adapter;
pinching said legs;
inserting said feet into said adapter; and
releasing said legs to lock said support on said adaptor.

136
~~135.~~ The method defined by claim 134 including configuring said support to releasably engage said adapter with a snap action.

137
~~136.~~ The method defined by claim 134 including configuring said adapter to have an opening, configuring said support to lock into said opening, said method including retentively engaging said support in said adapter opening.

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~~137.~~ The method defined by claim 136 wherein said adapter opening is engaged by barbed feet on said support legs.

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~~138.~~ The method defined by claim 134 including configuring said support to be stackable, and to have a provision for connecting a second support to itself, said method including daisy chaining said supports.

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~~139.~~ The method defined by claim 137 including configuring said support to retain an article.